<u>CLAIMS</u>

What is claimed is:

1   1.   A method for use by nodes to route packet traffic through a multiple-hop

2   wireless communications network, the method comprising:

3   detecting interference with packet-switched communications carried by

4   radio frequency (RF) over the multiple-hop wireless communications network;

5   and

6   adaptively determining, in response to information related to the detected

7   interference, a route for transmitting packets through the multiple-hop wireless

8   communications network that mitigates the effect of the interference on the

9   packets.

1   2.   The method of claim 1 further comprising the step of identifying a source

2   of the interference to be a node in the multiple-hop wireless communications

3   network, and wherein the adaptively determined route excludes the node.

1   3.   The method of claim 1 further comprising the step of identifying one or

2   more nodes interfered with by the interference, and wherein the adaptively

3   determined route excludes one or more of the interfered-with nodes.

1   4.   The method of claim 1 further comprising the step of approximating a

2   geographical location of a source of the interference, and wherein the

3   adaptively determined route excludes one or more nodes near that location.

28

1   5.   The method of claim 1 wherein the step of detecting interference includes

2   determining that signals received by a node are of an unauthorized protocol.

1   6.   The method of claim 1 wherein the step of detecting interference includes

2   determining that an address included in signals received by a node is an

3   address of a known unauthorized source.

1   7.   The method of claim 1 wherein the step of detecting interference includes

2   determining that a protocol header included in signals received by a node has

3   invalid information.

1   8.   The method of claim 1 further comprising operating a protocol at a

2   physical layer of a protocol stack that detects the interference.

1   9.   The method of claim 8 wherein the step of adaptively determining a route

2   is performed by a network layer protocol in the protocol stack in response to a

3   notification from the physical layer protocol of the interference.

1   10.   The method of claim 1 further comprising operating a protocol at a data

2   link layer of a protocol stack that detects the interference.

1   11.   The method of claim 10 wherein the step of adaptively determining a

2   route is performed by a network layer protocol in the protocol stack in response

3   to a notification from the data layer protocol of the interference.

1   12.   The method of claim 1 further comprising operating a protocol at a

2   network layer of a protocol stack that detects suspicious communication

3   behavior.

1   13.   The method of claim 12 wherein the step of detecting interference is

2   accomplished by a physical layer protocol of the protocol stack in response to a

3   notification from the network layer protocol of the suspicious network behavior.

1   14.   The method of claim 1 further comprising adaptively adjusting an

2   antenna pattern of a node in the wireless communications network in response

3   to detecting the interference.

1   15.   The method of claim 14 wherein the step of adaptively adjusting the

2   antenna pattern includes forming a null in the antenna pattern in a direction

3   of the interference.

1   16.   The method of claim 1 further comprising disseminating to nodes in the

2   multiple hop wireless communications network information related to the

3   detecting of the interference.

1   17.   The method of claim 16 wherein the disseminated information is an

2   identity associated with a source of the interference.

1   18.   The method of claim 16 wherein the disseminated information is an

2   identity associated with a node in the multiple hop wireless communications

3   network that is being interfered with by the interference.

1   19.   The method of claim 1 identifying a source of the interference to be a

2   node in the multiple-hop wireless communications network, calculating a cost

3   function for a plurality of routes from a sending node to a destination node that

4   exclude the interfering node, and selecting the route with a lowest cost

5   function.

1   20.   The method of claim 1 wherein the nodes in the wireless communications

2   network operate according to one of the protocols selected from the group

3   consisting of IEEE 802.11, BLUETOOTH, HYPERLAN and HOMERF.

1   21.   A protocol stack for use by a node to communicate over a wireless

2   communications network, the protocol stack comprising:

     a radio frequency (RF) physical layer for detecting signals that are

3   attempting to interfere with packet-switched communications at the node, the

4   RF physical layer producing a signal that indicates that interference has been

5   detected; and

6   detected; and

7   a network layer receiving the signal from the RF physical layer and

8   producing an alternate route of packets through the wireless communications

9   network in response to the signal.

1   22.   The protocol stack of claim 21 further comprising a data link layer for

2   checking for errors packets received by the node and sending a signal to the

3   network layer when interference has been detected.